

## Section 5-2: Medians and Altitudes of Triangles

By the end of this lesson, you should be able to answer:

- How do you identify and use medians in triangles?
- How do you identify and use altitudes in triangles?

Define the following:

1. Median

2. Centroid

3. Altitude

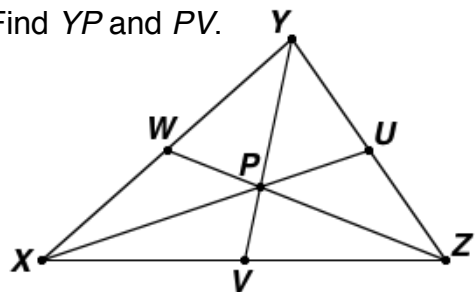
4. Orthocenter

Theorems:

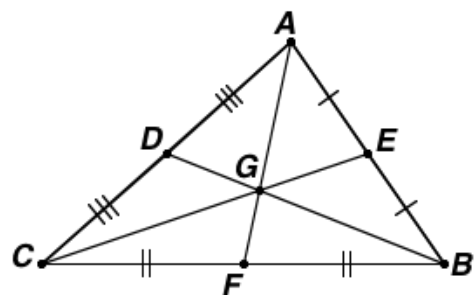
5.7 - Centroid Theorem

Special Segments and Points in Triangles				
Name	Example	Point of Concurrency	Special Property	Example
Perpendicular Bisector				
Angle Bisector				
Median				
Altitude				

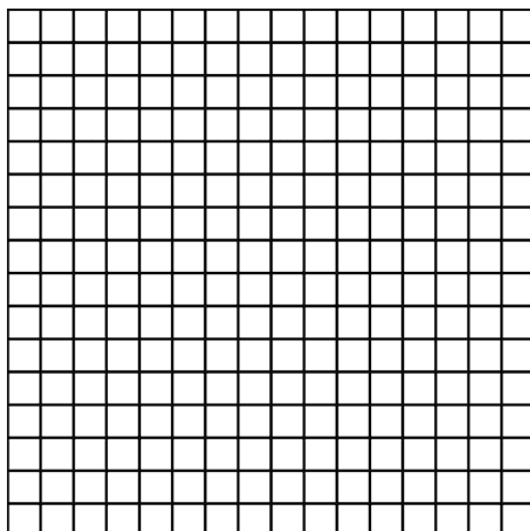
*Example 1:* In  $\triangle XYZ$ ,  $P$  is the centroid and  $YV = 12$ . Find  $YP$  and  $PV$ .



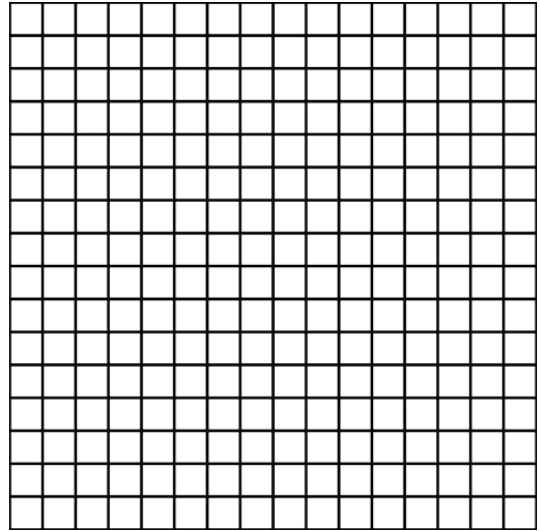
*Example 2:* In  $\triangle ABC$ ,  $CG = 4$ . Find  $GE$ .



*Example 3:* An artist is designing a sculpture that balances a triangle on tip of a pole. In the artist's design on the coordinate plane, the vertices are located at  $(1, 4)$ ,  $(3, 0)$ , and  $(3, 8)$ . What are the coordinates of the point where the artist should place the pole under the triangle so that it will balance?



*Example 4:* The vertices of  $\triangle HIJ$  are  $H(1, 2)$ ,  $I(-3, -3)$ , and  $J(-5, 1)$ . Find the coordinates of the orthocenter of  $\triangle HIJ$ .



Problem Set:

"Education's purpose is to replace an empty mind with an open one." - Malcolm Forbes